



Translation

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**RELOCKABLE, RECTANGULAR-SHAPED FOLDING BOX WITH LATERAL
OPENING**

The invention relates to a relockable, rectangular-shaped folding box with four side panels, a bottom closure formed by two bottom closing flaps and two dust flaps, a closure formed by one or two closing flaps and two dust flaps, if need arises, a two-layer hanger formed by gluing together two hanging tabs, each tab containing a hanging arrangement, with a first hanging tab being pivotally joined to the top of one of the side panels and the other hanging tab to this first hanging tab, with an insertion tab being laterally joined to a side panel, and with one of the side panels containing a zone that is to be removed along a perforation, with the insertion tab being glued outside or inside to the perforated zone.

German Patent Application DE P 39 32 441 discloses a relockable folding box, which consists of a front and a rear side panel, as well as two lateral side panels interconnecting the front and the rear side panels, a bottom panel, and an upper closing flap, with the closing flap being connected via a securing flap to an insertion tab, which in turn is arranged above a breaking line in the rear or the front side panel, and can be removed therefrom. However, this folding box presents no possibility of hanging it in any fashion on a hook.

Likewise, German Application DE P 43 22 555 discloses a relockable, rectangular-shaped folding box. This folding box comprises a rear side panel formed by an outer side panel and an inner side panel, a front side panel, two lateral side panels interconnecting the front and the rear side panel, a bottom closure and an upper cover, with the outer side panel mounting in its upper region a hanging tab with a correspondingly shaped hanging arrangement, such as, for example, a round or slotted hole. With the aid of the hanging tab, it is possible to place the folding box on a hook. However, since the hanging tab is made only in a single layer and consists of the same material as the remaining folding box, problems arise with the use of the folding box in practice.

When the folding box is made of a thin material in consideration of environmental and cost aspects, the hanging tab will lack of adequate stability. Even a slight, unintentional pulling of the folding box, will tear out the hanging tab, so that the hanging tab loses its function, and the folding box can no longer be hung as desired. Moreover, the box becomes unsightly and can thus be no longer presented to the customer.

On the other hand, the manufacture of the folding box of a thicker, more stable material will mean that while the hanging tab can be much more subjected to pulling forces, an unnecessarily large amount of material will also be wasted, since the other side panels of the folding box are made overdimensioned.

A similar folding box is disclosed in DE 195 41 904. The folding box consists of a front side panel, a rear side panel, a lateral right side panel

interconnecting the front and the rear side panel, as well as a lateral left side panel. The box includes a bottom closure formed by four bottom closing flaps, and an upper closure formed by four closing flaps, with two closing flaps of the upper closure and two closing flaps of the bottom closure being glued to one another. Furthermore, a tearing tab is integrated into the front or the rear side panel, which is held by means of a weakened or predetermined breaking line in the front or the rear side panel, and which connects via a folding line to a closing flap of the top closure or to a closing flap of the bottom closure. In the folding box, at least one rear inner side panel is provided, especially when the tearing tab is located in the rear side panel. In the case that the tearing tab is located in the front side panel, an intermediate side panel will be joined thereto that is followed by an inner front side panel.

In its region without a tearing tab, the rear side panel mounts in a plane formed by the rear side panel, a first hanging tab with a hanging arrangement, such as a slotted or round hole. From the same region of the inner rear side panel as the rear side panel, and proceeding from the folding line between the inner rear side panel and closing flap, a second hanging tab with a hanging arrangement, such as a slotted or round hole is punched out at the same time. In this instance, the closing flap joined to the inner rear side panel has on the folding line a greater width than the second hanging tab.

DE 195 35 008 discloses a relockable, rectangular-shaped folding box, with a front side panel, a rear side panel, a lateral left side panel interconnecting the front side panel and the rear side

panel, as well as a lateral right side panel, a relockable bottom, preferably consisting of three bottom closing flaps that are joined to the side panels, and three further closing flaps, which are joined to the lateral left side panel interconnecting the front side panel and the rear side panel, and to the lateral right side panel, and which are opposite to the bottom closing flaps, as well as a fourth closing flap, which is joined to the rear side panel, and which forms together with three further closing flaps, the upper closure of the folding box, so that it permits hanging the folding box in a reliable and safe manner on the known self-service hooks on display shelves inside stores or pharmacies.

While this folding box includes a hanger made in two layers, it has no original closure that is relockable.

DE 198 21 087 discloses a relockable, rectangular-shaped folding box with a front side panel, a rear side panel, a lateral right side panel interconnecting the front side panel and the rear side panel, as well as a lateral left side panel, a bottom closure formed by four bottom closing flaps, and an upper closure formed by four closing flaps. Two closing flaps of the top closure and two closing flaps of the bottom closure are glued to one another. A tearing tab integrated in the front or the rear side panel is held in the front side panel by means of a weakened or predetermined breaking line, and connects via a folding line to a closing flap of the upper closure, or to a closing flap of the bottom closure. The folding box also includes at least one inner rear side panel, which mounts, if necessary, an intermediate

panel and an inner front side panel subsequent to the intermediate panel.

Furthermore, a tab is integrated in the front side panel or the rear side panel by means of two weakened or predetermined breaking lines, and reversibly glued by means of at least one adhesive point.

EP 697 340 discloses a folding box of cardboard, wherein a hinged lid is provided with a closing tab for being inserted into the box in locking engagement therewith. To this end, the cardboard box requires a preformed slot, so that it does not ensure a dustproof packing and a simple relocking.

Furthermore, all boxes known from the art have the disadvantage that provided they have the original closure as disclosed in DE P 43 22 555, the hanger is always located on the side of the folding box opposite to the original closure, i.e. in the bottom region of the folding box, when the described folding boxes are boxes folded from a one-piece blank. A subsequent gluing of a hanger to the box is to be always avoided for the foregoing reasons.

It is further disadvantageous that all folding boxes of the art use an unnecessarily large amount of material for ensuring a hanger and a relockability at the same time.

Folding boxes are used as packaging and at the same time as advertisement media of the products being sold therein. Packing costs, which include not only a simple automatic filling and gluing, but also the costs of material, must be as low as possible.

It is therefore an object of the present invention to create a folding box, which includes not only a stable hanging tab and a relockable closure, but

can also be produced while requiring a small amount of material. Furthermore, it is an object of the present invention to make available a folding box, which is simple and fast to put up, to fill, and to close with the aid of machines, and whose folding blank including hanger and closure consists of one piece.

A further object of the present invention is to make available a folding box with an original closure, which includes no hanging tab, and which represents an alternative to the known folding boxes, with the advantages of requiring only little material and having at the same time an adequate stability.

This object of the invention is accomplished by the teaching of independent claims 1 and 2. Advantageous embodiments are defined in the dependent claims. Furthermore, the invention relates to the blanks of the folding boxes according to the invention.

The folding box of the invention comprises a front side panel, a rear side panel, as well as two lateral side panels, a bottom closure formed by two closing flaps and two dust flaps, if need be, a two-layered hanger that is formed by gluing together two hanging tabs, which each include a hanging arrangement. In the embodiment with a hanging tab, a first hanging tab is hinged in one embodiment to the top of the front and the rear side panel, and a corresponding hanging tab is hinged to this first hanging tab and glued thereto by being folded over. A narrow lateral side panel mounts on its side an insertion tab, and the wide side panel includes a zone that is to be removed along a perforation, with the insertion tab being glued outside or inside to the perforated zone.

The invention relates to an upended folding box, preferably provided with a hinged, two-layered

Euro tab, which has an opening region via the insertion tab on the side, either to the left or to the right respectively in the rear or in front. During the gluing process in the manufacturing plant of the folding box, the insertion tab is glued to the face of the rear side or the front side of the folding box in the region of the perforated zone. When opening the folding box for the first time, the insertion tab is slightly pushed into the body. As a result, the perforated zone glued to the insertion tab is removed from the rear or the front side. This gluing serves as original closure.

By gluing the tab surface outside to the front side or the rear side area of the folding box, the later separated original closure surface is invisibly glued below to the insertion tab. After a relocking, it will become visible to every user that the folding box is no longer originally sealed.

However, the folding box may also be configured such that the perforated surface is not glued below the insertion tab, but that the insertion tab is glued below the perforated surface, i.e., inside. This variant has the advantage that the unbroken original closure, namely the perforated zone, is clearly visible before the first opening. This means that a theft protection is clearly identifiable, and that a first opening is self-explanatory.

When relocking the box, the dust flaps hinged to the insertion tab, and the insertion tab separated from the body are jointly inserted into the folding box. On the side where they are to be inserted, the dust flaps have preferably rounded edges. These serve for a better insertion of the tab into the body of the folding box.

The preferred folding box with a hanging arrangement is constructed in two different ways in the region of the hanging tab.

Preferably, the two interconnected, folded over and glued-together hanging tabs are pivotally joined to a long side of a cover surface. In this instance, the cover surface extends only in part over an underlying second cover surface.

Especially material saving and advantageous is an embodiment, wherein one hanging tab is glued to the closing flap instead of being directly joined to the other hanging tab.

It is obvious to the skilled person that interconnected parts of the folding box are preferably glued together. To this end, it is possible to use common adhesives. Moreover, however, it is also possible to use other known connection means.

Embodiments of the folding box according to the invention are described in greater detail with reference to the drawings 1-11.

Figure 1 shows a blank of a folding box of an embodiment A with a hanging arrangement;

Figure 2 shows the closing sequence during the gluing process of the folding box;

Figure 3 shows the glued-together folding box with a hanger put upright;

Figure 4 shows a blank of a folding box of an embodiment B with a hanging arrangement;

Figure 5 shows the folding sequence (bending technique) in the region of the hanging tab;

Figure 6 shows the sequence that leads to the closing and gluing of the folding box and the tabs;

Figure 7 shows the folding box after the gluing step, when the double hanging tab is mechanically put upright;

Figure 8 shows the relocking step of the folding box after a first opening, wherein the separated breaking surface remains glued below the insertion tab;

Figure 9 shows the folding box A with a glued-under insertion surface (inside);

Figure 10 shows a blank of the folding box of embodiment A without hanging arrangement; and

Figure 11 shows the closing sequence during the gluing step of the folding box without hanging arrangement.

Figure 10 illustrates a blank for folding a box of an embodiment A without a hanging arrangement. The folding box is formed from laterally hinged front side panel 1, rear side panel 3, as well as two lateral side panels 2, 4. Hinged to the bottom of side panels 1, 3 are two bottom closure flaps 11, 31, and to the narrow lateral side panels 2, 4, two dust flaps 21, 41, which form a bottom closure 20.

After putting the folding box in an upright position, the bottom surfaces 11, 31 are glued together, with the surfaces 21, 41 serving as dust shields.

At the top, the side panel 1 connects to two closing flaps 12, 32, and the two narrow side panels 2, 4 to two dust flaps 22, 42, which form a closure 30.

Preferably the dust flaps 41, 42 have rounded edges 411, 421. They serve for a better insertion of a tab, when relocking the folding box, as is accordingly shown in Figure 8 for a folding box with a hanger,

thereby ensuring a simplified closing of the folding box.

Figure 11 shows the folding sequence for the gluing step of the closure of embodiment A. To begin with, the closure surface 12 is folded inward. If need be, it is glued to dust flap 22 (sequence step 1), and finally the surface 32 is glued to the inward folded surface 12 that extends below it (sequence step 2).

Figure 1 shows a folding box blank of the embodiment A with a hanging arrangement. The finished folding box thereof is shown in Figure 9.

The folding box is formed from laterally hinged front side panel 1, rear side panel 3, as well as two lateral side panels 2, 4. Hinged to the bottom of side panels 1, 3 are two bottom closing flaps 11, 31, and the narrow lateral side panels 2, 4 mount at their bottom two dust panels 21, 41, which form a bottom closure 20.

After putting the folding box in an upright position, the bottom surfaces 11, 31 are glued together, with the surfaces 21, 41 serving as dust shields.

Hinged to the top of side panel 1 is a closing flap 12, and the narrow lateral side panels 2, 4 mount at their top two dust flaps 22, 42, which form a closure 30.

Preferably, the dust flaps 41, 42 have rounded edges 411, 421 extending toward the side panel 1. They serve for a better insertion of an insertion tab, when the box is reclosed, as shown in Figure 8, thereby ensuring a simplified closing of the folding box.

Hinged via a cover flap 32 to the top of the rear side panel 3 is a hanging tab 33 (embodiment A).

However, it is also possible to pivotally join the hanging tab 33 to the rear side panel 3 directly, i.e., without cover flap 32.

Hinged to the hanging tab 33 is a second hanging tab 34, which thus make available a hanging attachment 37.

The two connected, folded over, and glued together hanging tabs 33, 34 are pivotally joined to the long side of the cover surface 32. The cover surface extends only in part over the closing flap 12 lying below it, since a hanger 50, should be located, if possible, in the center (Figure 3). In the case of very narrow folding boxes, it will be better, when, because of the gluing process, the front cover surface 32 is made somewhat wider than half the width of the folding box, so that the hanger is located somewhat offset from the center.

Preferably, the cover surface 32 has therefore at least half the width, preferably a width of 0.55 to 0.6 of the closing flap 12.

As a result, one obtains a hanger in the center (width 0.5 of the flap 12), at the edge of side panel 1 (width about 1 of the flap 12), or at the edge of side panel 3 (width about 0.1 of flap 12). If the width of the cover surface 32 is the same as that of the flap 12, the hanger will be located in the extension of the side panel 1. If the width of the cover surface 32 equals 0, an embodiment will result, in which the hanging tab 33 is directly hinged to the side panel 3, and in which the hanger is therefore positioned on the side panel 3.

Figure 2 shows the folding sequence for the gluing step of the closure of embodiment A. To begin with, the flap surfaces 33 and 34 are glued together

(sequence step 1). Subsequently, the closing surface 12 is folded inward, if need be, glued to the dust flap 22 (sequence step 2), and finally the surface 32 is glued to the inwardly folded surface 12 that extends below it (sequence step 3).

For the person of skill in the art it is obvious and self-explanatory that the descriptions for the front side panel apply in a corresponding manner to the rear side panel.

Hinged to the side of the lateral side panel 4 of the folding box according to the invention is an insertion tab 5, and the side panel 1 includes a zone 13 that is to be removed along a perforation 113. On its lateral side panel 4, the blank of the folding box includes the insertion tab 5. During the gluing process in the manufacturing plant of the folding box, the insertion tab 5 is glued to the surface 13 that is removable from the panel 1 along the perforation 113.

Especially material saving and advantageous is the arrangement of the hanging tab as shown in Figures 4-8.

In this connection, Figure 4 illustrates a folding box blank of an embodiment B. Unlike the embodiment A (Figure 1), instead of being joined to the hanging tab 33, the hanging tab 34 connects to closing flap 12.

Figures 5, 6, and 7 show the closing sequence. The tab region is constructed such that it becomes two-layered by the gluing process in the cartoner, after products have been filled into the folding box. After closing in the packaging line, the cartoner first folds the tab surface 33 outward, as shown in Figure 5 (step 1). Thereafter, the closing flap 12 and the hanging tab 34 connected thereto are

folded over (Figure 6, step 2). Finally, the tab 33 is put upright and glued to the tab 34 to form the hanger 50.

In its punched out shape, the rearward tab surface 33 must be somewhat smaller in its outside dimensions, so that the rearward tab blank is unable to show in front. However, it is desired that the hanging hole, also named Euro hole, be cut in its contour somewhat larger, for likewise avoiding that it shows in front.

In the case of this tab construction, the sequence is decisive, which leads to the closing of the folding box and to the gluing of both hanging tabs.

As shown in Figure 8, an opening of the folding box occurs by tearing off the surface 13 over the tab 5 that is glued to it.

A reclosing occurs by jointly inserting the insertion tab 5 and the dust flaps 41, 42.

As a result of their simple construction, it is possible to achieve in the case of the two folding box variants A and B an optimal use of the packaging material in a simultaneously simple manufacturing process in the production lines.

Advantageously, it is possible to change the blank in the manufacturing plant of the folding box in terms of gluing such that the surface 13 is not glued under the surface 5, but that the surface 5 is glued under the surface 13. This means, that the tab 5 can be glued to the zone 13 outside or inside thereof. The latter variant has the advantage that the unbroken original closure is clearly visible before a first opening, that the theft protection is clearly identifiable, and that a first opening is self-explanatory (Figure 9).

The integration of the hanger into the blank of the folding box, makes it possible to complete manufacture of the folding box within one operation. A subsequent and thus unnecessarily expensive gluing of a hanger is not needed.

With the exception of the hanger and the provided gluing points, the folding box of the invention is made in a single layer, and thus fulfills the required minimization of material. Moreover, the folding box of the invention is adapted for processing on machines, i.e., it can be fully automatically glued from one punched blank. In this manner, one obtains a dustproof and relockable packaging for the products inside the folding box.

The front and back sides of the folding box present excellent possibilities of realization. After putting up and filling the folding box, it is possible to glue it in a simple manner. This gluing provides a satisfactory protection against dust, so that a subsequent wrapping or an additional packing of the folding box becomes unnecessary. The folding box is glued, dustproof, originally closed, and relockable. It is easy to handle and variable in its realization. A troublefree processing is possible. Furthermore, the folding box is environmentally protective, and produced from a blank with the use of a smallest amount of material.

Preferably the hanger is pivotally joined so that it ensures a hanging in the center, when the packaging is closed and glued. This has the advantage that when hanging the folding box in a shelving system, it is possible to hang it just right.

The folding box of the invention enables a hanging in shelving systems and a lateral product removal without damaging the hanger.